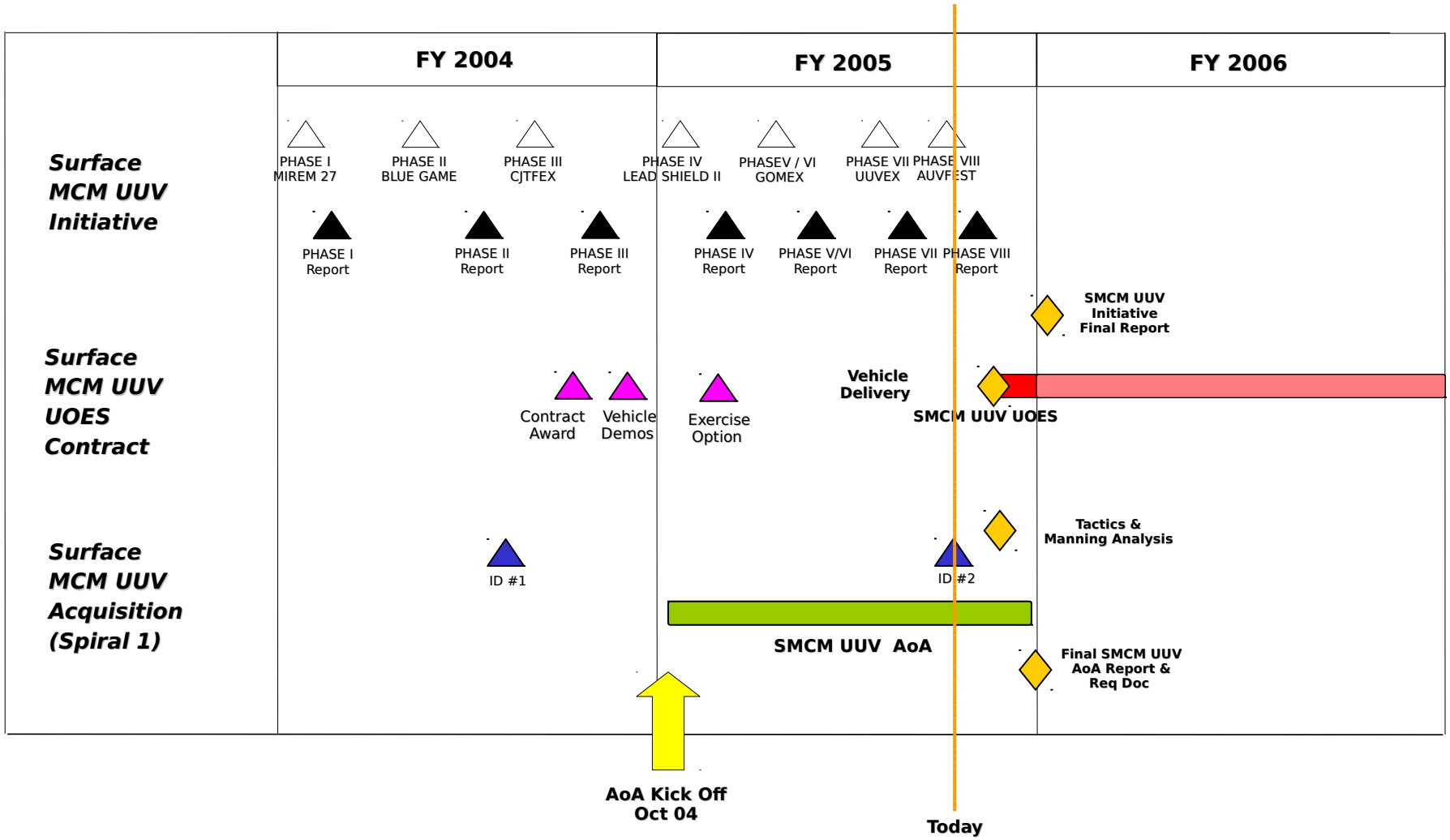
Concept for Experimentation and Employment of Prototype Small UUVs for Surface Mine Countermeasures (SMCM) Ships Initiative

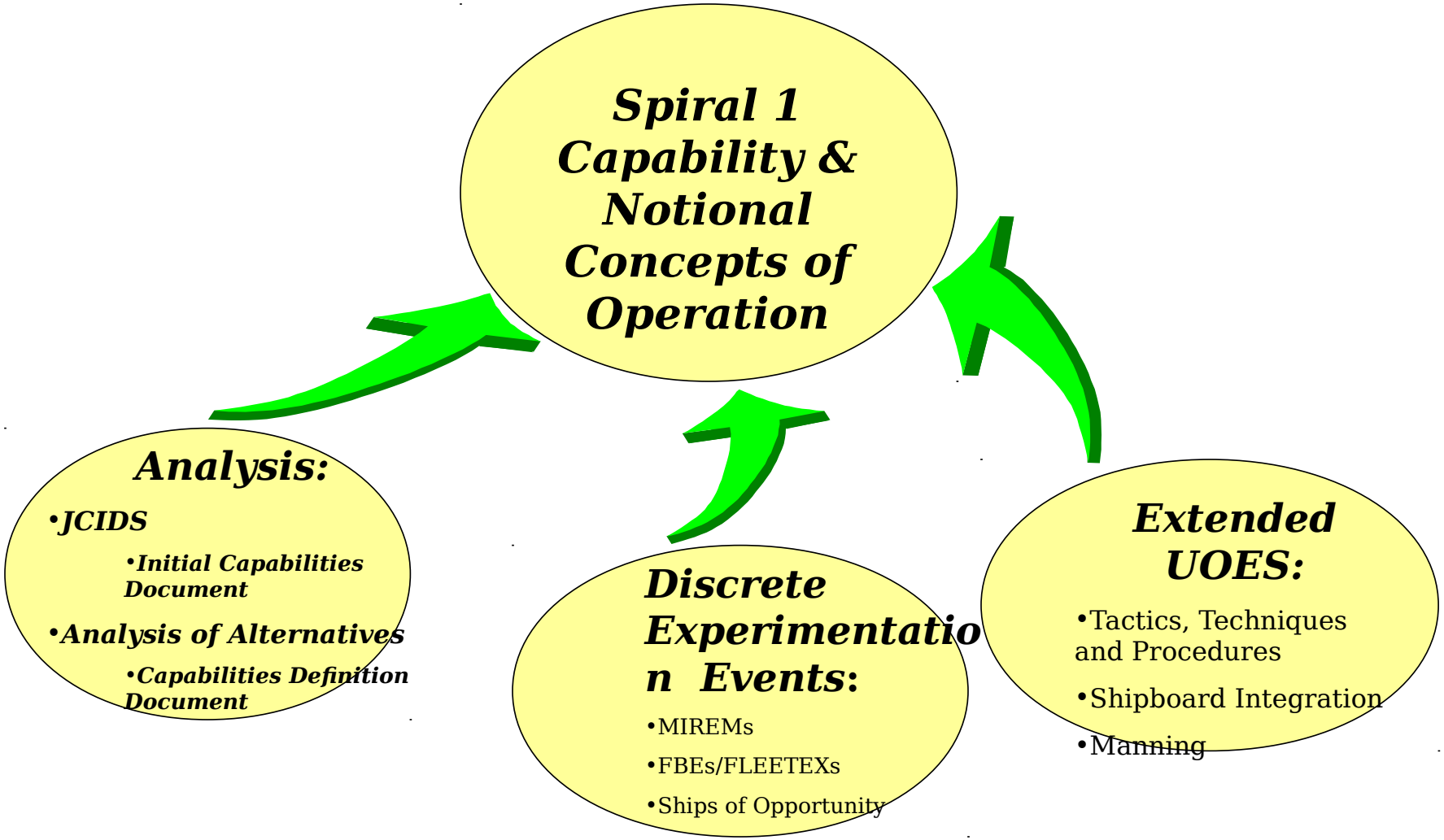
Industry Day #2

20 July 2005

SMCM UUV Experimentation Program Timeline



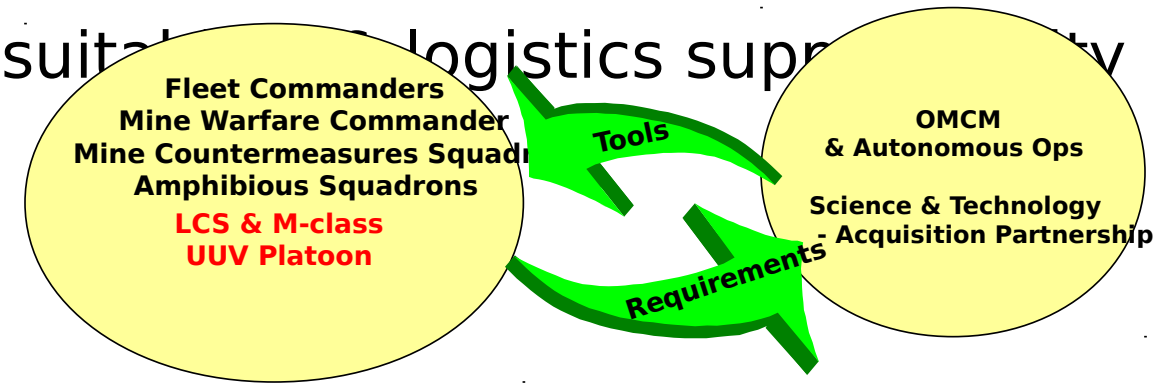
SMCM UUV Concept of Experimentation



SMCM UUV Systems

The "User Operational Evaluation Systems" Concept

- "Fly-then-Buy" Concept
- User Operational Evaluation Systems (UOES) were procured and provided to the Fleet to aid in:
  - Early engagement of Fleet in acquisition
  - Tactics evaluation and feedback on Fleet employment concepts
  - Requirements refinement
  - Affordability,suita logistics supp ty concerns



SMCM UUV Systems

FY05 UOES Procurement

- Two contracts awarded: Aug 04
  - Demonstration of un-tethered underwater MCM vehicles
  - Options for prototype vehicles, spares, training, & limited technical support
- Hydroid, Inc. – Shallow Water REMUS
  - 7.5” Vehicle
  - Quantity: 2
  - Scheduled Delivery: September 05
- Bluefin Robotics Corp. – MCM12
  - 12.75“ Vehicle
  - Quantity: 1
  - Scheduled Delivery Date: September 05

Shallow Water REMUS

Description of SMCM UUV UOES Toolbox

Basic Characteristics

- 2 vehicles purchased
- Variant of Hydroid REMUS 100
- Dimensions: 52” long x 7.5” diameter
- Weight: 86 pounds (vehicle only)
- Speed: 4.5 knots max
- Range: 45 nm @ 4.5 knots
- Depth: 300 FSW

Sensors & Navigation

- Dual-band 900/1800 kHz side-scan sonar
- Iridium capable
- Optical backscatter sensor
- Doppler velocity log
- Long-baseline acoustic navigation array
- P-code GPS
- Inertial Navigation System

Other Attributes

- Two-person portable
- Shippable via FEDEX
- Multi-vehicle capable
- Lost UUV recovery hardware & software

BLUEFIN MCM12

Description of SMCM UUV UOES Toolbox

Basic Characteristics

- 1 vehicle purchased
- Dimensions: 65” long (core section) + up to 48” payload x 12.75” diameter
- Weight: 320 pounds (core section)
- Speed: greater than 5 knots
- Range: 60 nm @ 4.5 knots (w/ 100W for payload)
- Depth: 600 FSW

Sensors & Navigation

- Side Scan Sonar: Marine Sonics Dual Frequency (900 / 1800 kHz)
- Doppler Velocity Log: 600 kHz
- Depth Sensor
- Turbidity Probe: D&A Instruments OBS-3
- Navigation: Compass / GPS / DVL (SVP aided)

Other Attributes

- Batteries: 3 x 1.5 kWh
- Design: Modular, free-flooded design with easily swappable/removable battery packs
- Intuitive software interface
- Trouble-free sensor upgrades – ensures future utility
- Data Storage: 44 GB

SMCM UUV UOES Plan

- **Personnel**
  - COMINEWARCOM UUV Platoon
  - UUV TECHREP
- **Logistics Support**
  - Prototype UUVs to be maintained and operated by UUV Platoon
  - Maintenance funding will be provided by the program office
- **Data Collection**
  - Data Collection will be conducted by UUV Platoon & TECHREP
- **Surface Demonstration Platform**
  - Potential single M-class ship and crafts of opportunity to be UUV test and evaluation platform for UOES period

SMCM UUV UOES
Objectives

- Demonstrate that UUVs can be launched and recovered from MCM
- Demonstrate reacquisition of UUV detected contacts by AN/SQQ-32 sonar or AN/SLQ-48 MNS
- Evaluate UUV system interoperability with SMCM combat systems and other UUV systems of opportunity
- Evaluate collected UUV oceanographic data for use in MCM mission planning
- Validate capabilities and limitations (including operating environment)
- Determine logistics support infrastructure requirements
- Identify resources available to support recommended outfitting